Docket No.: 2454.1096

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Johann ARNOLD et al.

Serial No. 10/809,457 Group Art Unit: 2416

Confirmation No. 7652

Filed: March 26, 2004 Examiner: Chandrahas B. Patel

For: METHOD FOR TRANSMITTING REAL-TIME DATA MESSAGES IN A CYCLIC COMMUNICATIONS SYSTEM

APPEAL BRIEF UNDER 37 C.F.R § 41.37

Mail Stop Appeal Brief-Patents
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

In a Notice of Appeal filed August 24, 2009, the applicants appealed the Examiner's April 24, 2009 Office Action finally rejecting claims 1-24. Appellants' Brief, together with the requisite fee set forth in 37 C.F.R. § 1.17, is submitted herewith.

A Petition for a two-month extension of time, together with the requisite fee for same, is submitted herewith, thereby extending the period for filing an Appeal Brief to December 24, 2009.

Should any additional fees be required or an overpayment of fees made, please debit or credit our Deposit Account No. 19-3935, as needed.

TABLE OF CONTENTS

I. REAL PARTY IN INTEREST (37 C.F.R. § 41.37(c)(1)(i))

The real party in interest is Siemens Aktiengesellschaft, the assignee of the application.

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. § 41.37(c)(1)(ii))

Appellant, appellant's legal representative, and the assignee do not know of any prior or pending appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS (37 C.F.R. § 41.37(c)(1)(iii))

Claims 1-24 have been finally rejected and are on appeal.

IV. STATUS OF AMENDMENTS (37 C.F.R. § 41.37(c)(1)(iv))

Appellants' Response filed July 24, 2009 was entered for purposes of Appeal as indicated by the Advisory Action mailed August 3, 2009.

V. SUMMARY OF CLAIMED SUBJECT MATTER (37 C.F.R. § 41.37(c)(1)(v))

Independent claim 1 recites a method for transmitting real-time data packets in a cyclic communication system, wherein each of a plurality of transmission cycles has a first partial cycle for transmitting real-time communication and a second partial cycle for transmitting non-real-time communication (see paragraphs [51]-[52] and [67]). The method includes pre-planning the real-time communication before the communication starts (see paragraphs [27], [30], and [37]). The method further includes determining a cycle number of a particular transmission cycle (see paragraph [57]). The method further includes processing a transmission sequence of real-time data packets within the first partial cycle of the particular transmission cycle (see paragraph [22]). Furthermore, the transmission sequence is composed of one or more partial sequences, the composition of which depends on the cycle number determined for the particular transmission cycle (see paragraphs [15] and [57]-[58]). Also, the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle (see paragraphs [57]-[58]) and the pre-planning comprises defining a duration of each of the plurality of transmission cycles (see paragraph [23]).

Independent claim 6 recites a user of a cyclic communication system that is operable to transmit one or more transmission cycles each of which has a first partial cycle for real-time communication and a second partial cycle for non-real-time communication, wherein the real-time communication is pre-planned in advance before the communication starts (see paragraphs [27], [30], [37], [51]-[52] and [67]; Fig. 1). The user includes means for determining a cycle number of a particular one of the transmission cycles (see paragraphs [56]-[57]; Fig. 1). The logic portion 116 of user 100 can be made available by a programmed microprocessor or by an application-specific integrated circuit (ASIC). During operation of the user 100, the logic portion 116 accesses the current counter status of the cycle counter 118 to determine the cycle number of the subsequent transmission cycle. The user further includes means for processing a transmission sequence within a first partial cycle of the particular transmission cycle (see paragraphs [22], [54], and [58]; Fig. 1). The user has a module 114 that is used to generate a transmission sequence of IRT data packets to be sent or received in a transmission cycle and the type and number of the data packets to be transmitted in the IRT part of the communication cycle varies depending on the change frequency of the user data and/or the requirements of the program 110. Furthermore, the transmission sequence is composed of one or more partial sequences, the composition of which depends on the cycle number of the particular

transmission cycle (see paragraphs [15] and [57]-[58]). Also, the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle (see paragraphs [57]-[58]) and a pre-planning of the real-time communication comprises defining a duration of each of the plurality of transmission cycles (see paragraph [23]).

Independent claim 10 recites a cyclic communication system with at least a first and a second user, wherein each of one or more transmission cycles has a first partial cycle for real-time communication and a second partial cycle for non-real-time communication, wherein the real-time communication is pre-planned in advance before the communication starts (see paragraphs [27], [30], [37], [51]-[52] and [67]; Fig. 1). The first and second users include means for determining a cycle number of a particular transmission cycle (see paragraphs [56]-[57]; Fig. 1). The logic portion 116 of user 100 can be made available by a programmed microprocessor or by an application-specific integrated circuit (ASIC). During operation of the user 100, the logic portion 116 accesses the current counter status of the cycle counter 118 to determine the cycle number of the subsequent transmission cycle. The first and second users further include means for processing a transmission sequence in the first partial cycle of the particular transmission cycle (see paragraphs [22], [54], and [58]; Fig. 1). The user 100 has a module 114 that is used to generate a transmission sequence of IRT data packets to be sent or received in a transmission cycle and the type and number of the data packets to be transmitted in the IRT part of the communication cycle varies depending on the change frequency of the user data and/or the requirements of the program 110. Furthermore, the transmission sequence is composed of one or more partial sequences the composition of which depends on the determined cycle number (see paragraphs [15] and [57]-[58]). Also, the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle (see paragraphs [57]-[58]) and a pre-planning of the real-time communication comprises defining a duration of each of the plurality of transmission cycles (see paragraph [23]).

Independent claim 14 recites a communication system operable to isochronously transmit data between respective users during transmission cycles (see paragraphs [51]-[52]; Fig. 1). The system includes a network operable to connect the users (see paragraph [19], which discloses Internet-based and Intranet-based data communication). The system further includes an application program corresponding to a first user (see paragraph [53]; Fig. 1). The user 100 has an application program 110 that implements, for example, an open loop or closed loop process. The system further includes a memory portion corresponding to the first user and

operable to store user data to facilitate control of the first user, and output data to be transmitted over the network to a second user (see paragraph [53]; Fig. 1). The user 100 includes memory 112 for storing user data and output data. The system further includes a cycle counter corresponding to the first user and operable to count the transmission cycles corresponding to a communication between the first user and the second user (see paragraphs [56]-[57]; Fig. 1). The system further includes a processing portion corresponding to the first user and operable to determine a number of a subsequent transmission cycle (see paragraphs [56]-[57]; Fig. 1). The logic portion 116 of user 100 can be made available by a programmed microprocessor or by an application-specific integrated circuit (ASIC). During operation of the user 100, the logic portion 116 accesses the current counter status of the cycle counter 118 to determine the cycle number of the subsequent transmission cycle. Furthermore, the output data is transmitted from the first user to the second user during the subsequent transmission cycle which is divided into a real-time partial cycle and a non-real-time partial cycle in a manner that depends on the cycle number determined by the processing portion (see paragraphs [51]-[52], [57]-[58] and [67]). Also, the cycle number determines which of the partial sequences are transmitted in the subsequent transmission cycle (see paragraphs [57]-[58]), a real-time communication is pre-planned before the communication starts (see paragraphs [27], [30], and [37]), and a pre-planning of the real-time communication comprises defining a duration of the transmission cycles (see paragraph [23]).

Independent claim 21 recites a method for transmitting real-time data packets in a cyclic communication system, wherein each of a plurality of transmission cycles has a first partial cycle for transmitting real-time communication and a second partial cycle for transmitting non-real-time communication (see paragraphs [51]-[52] and [67]). The method planning the real-time communication (see paragraphs [27], [30], and [37]). The method further includes determining a cycle number of a particular transmission cycle (see paragraph [57]). The method further includes processing a transmission sequence of real-time data packets within the first partial cycle of the particular transmission cycle (see paragraph [22]). Furthermore, the transmission sequence is composed of one or more partial sequences, the composition of which depends on the cycle number determined for the particular transmission cycle (see paragraphs [15] and [57]-[58]). Also, the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle (see paragraphs [57]-[58]), each partial cycle for transmitting real-time communication comprises microcycles (see paragraphs [57]-[58], which disclose

microcycles 1, 2, 3, etc.), and only isochronous real-time communication is transmitted in the microcycles (see paragraphs [57]-[58] and [68]).

Independent claim 24 recites a communication system operable to isochronously transmit data between respective users during transmission cycles (see paragraphs [51]-[52]; Fig. 1). The system includes a network operable to connect the users (see paragraph [19], which discloses Internet-based and Intranet-based data communication). The system further includes an application program corresponding to a first user (see paragraph [53]; Fig. 1). The user 100 has an application program 110 that implements, for example, an open loop or closed loop process. The system further includes a memory portion corresponding to the first user and operable to store user data to facilitate control of the first user, and output data to be transmitted over the network to a second user (see paragraph [53]; Fig. 1). The user 100 includes memory 112 for storing user data and output data. The system further includes a cycle counter corresponding to the first user and operable to count the transmission cycles corresponding to a communication between the first user and the second user (see paragraphs [56]-[57]; Fig. 1). The system further includes a processing portion corresponding to the first user and operable to determine a number of a subsequent transmission cycle (see paragraphs [56]-[57]; Fig. 1). The logic portion 116 of user 100 can be made available by a programmed microprocessor or by an application-specific integrated circuit (ASIC). During operation of the user 100, the logic portion 116 accesses the current counter status of the cycle counter 118 to determine the cycle number of the subsequent transmission cycle. Furthermore, the output data is transmitted from the first user to the second user during the subsequent transmission cycle which is divided into a real-time partial cycle and a non-real-time partial cycle in a manner that depends on the cycle number determined by said processing portion (see paragraphs [51]-[52], [57]-[58] and [67]). Also, the cycle number determines which of the partial sequences are transmitted in the subsequent transmission cycle (see paragraphs [57]-[58]) and each partial cycle for real-time communication comprises microcycles (see paragraphs [57]-[58], which disclose microcycles 1, 2, 3, etc.), wherein only isochronous real-time communication is transmitted in the microcycles (see paragraphs [57]-[58] and [68]).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL (37 C.F.R. § 41.37(c)(1)(vi))

Claims 1-17 and 20 stand rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent No. 6,483,846 to Huang et al. (hereinafter referred to as "Huang") in view of U.S. Patent No. 6,754,226 to Nakano (hereinafter referred to as "Nakano").

Claims 18-19 stand rejected under 35 USC § 103(a) as being unpatentable over Huang in view of Nakano and further in view of U.S. Patent No. 6,505,247 to Steger et al. (hereinafter referred to as "Steger").

Claims 21-24 stand rejected under 35 USC § 103(a) as being unpatentable over Huang in view of Nakano and further in view of U.S. Patent No. 5,390,132 to Shioe et al. (hereinafter referred to as "Shioe").

VII. ARGUMENT

A. Review of the prior art

1. U.S. Patent No. 6,483,846 ("Huang")

Huang discloses a middleware approach to implementation of real-time Ethernet that provides deterministic, i.e. predictable, communication services over the conventional Ethernet network. The middleware resides above the network interface device and the device driver, yet below the system transport services and/or user applications. The middleware schedules and controls admission of data packets onto the network and guarantees the real-time constraints of the data packets once they are admitted. Collision of data streams is prohibited during transmission of real-time data, yet collisions are allowed during transmission of soft or non-real-time data for improved utilization of bandwidth. Bandwidth utilization is further optimized by incorporating a quality of service definition into the scheduling determination.

2. U.S. Patent No. 6,754,226 ("Nakano")

Nakano discloses a transmission method and apparatus for detecting the format of data when data is absent from the transmission packets. In situations where data to be transmitted via a predetermined network (e.g., IEEE 1394) is absent (i.e., missing, incomplete, intentionally blank, or not ready to be transmitted), the transmission method allows for the format of the absent data to be determined by the receiving side. According to this transmission method, the data transmission packets include a label section that indicates the format of the data or the absence of data. When the label section indicates an absence of data, a label group section is included in the data transmission packet to indicate the format of the data which is absent. This allows the receiving side to determine the format of the data that it should be receiving.

3. U.S. Patent No. 6,505,247 ("Steger")

Steger discloses a system and method of industrial automation provides improved network transfer of data between nodes. The system comprises a plurality of computer systems which are interconnected through a network, wherein each of the computer systems executes industrial automation software.

4. U.S. Patent No. 5,390,132 ("Shioe")

Shioe discloses a distributed control system comprising a control station and a remote input/output device interconnected by a bus.

B. Claims 1-17 and 20 are patentable over Huang in view of Nakano

In the Final Office Action, the Examiner rejected claims 1-17 and 20 over Huang in view of Nakano.

It is submitted that the Examiner failed to establish a prima facie case of obviousness. The references in combination do not teach or suggest all the features of claim 1, for example.

For example, independent claim 1 recites, in part:

> wherein the transmission sequence is composed of one or more partial sequences, the composition of which depends on the cycle number determined for the particular transmission cycle,
>
> wherein the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle, and
>
> wherein the pre-planning comprises defining a duration of each of the plurality of transmission cycles.

In the final Office Action, the Examiner acknowledged that Huang does not teach that the composition of each transmission sequence depends on the cycle number determined for the particular transmission cycle, and attempts to make up for this deficiency with Nakano. However, the Applicants respectfully disagree because Nakano also does not teach that the composition of each transmission sequence depends on the cycle number determined for the particular transmission cycle, as recited in claim 1. The Examiner points to col. 4, lines 60-67 and col. 5, lines 1-6 of Nakano as disclosing this feature of claim 1 and states that "number of channels determined partial sequences which is predetermined as described in Col. 5, lines 31-39." However, this is incorrect because the indicated passages of Nakano do not disclose that the composition of each transmission sequence depends on the cycle number. The channels disclosed in Nakano do not correspond to the transmission cycles as recited in claim 1, for example. The channels in Nakano are merely channels for transmitting isochronous packets within each communication cycle and the channels may be provided with numbers (1, 2, 3, ..., n) for distinguishing each of the packets. However, nowhere in Nakano is it disclosed that a number of the communication cycle determines which composition of channels are used or which composition of packets are transmitted during that particular cycle. In fact, Nakano appears to indicate that every channel is available during every communication cycle and that certain channels may be unused if there aren't enough isochronous packets needing transmission during a particular cycle. Figure 4 of Nakano illustrates only a single full cycle #m.

However, there is no indication in Nakano that the cycle number #m dictates or determines which composition of one or more of the isochronous packets make up the transmission sequence for that particular cycle number #m. Thus, Nakano also does not teach that the composition of each transmission sequence depends on the cycle number determined for the particular transmission cycle, as recited in claim 1.

The Examiner further acknowledged that Huang does not teach that the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle, and attempts to make up for this deficiency with Nakano. However, the Applicants respectfully disagree because Nakano also does not teach that the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle, as recited in claim 1. The Examiner points to col. 4, line 60 through col. 5, line 6 of Nakano as disclosing this feature of claim 1 and states that "depending on whether Iso packet is present or not the transmission sequence is determined." However, this is incorrect because the indicated passages of Nakano do not disclose that the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle. The Examiner makes reference to determining the transmission sequence. However, this feature of claim 1 is not concerned with a sequence or order of the partial sequences, but instead is concerned with which partial sequences are actually transmitted in the particular cycle, regardless of an order of the partial sequences. As discussed above, the channels disclosed in Nakano do not correspond to the transmission cycles as recited in claim 1, for example. The channels in Nakano are merely channels for transmitting isochronous packets within each communication cycle and the channels may be provided with numbers (1, 2, 3, ..., n) for distinguishing each of the packets. However, nowhere in Nakano is it disclosed that a number of the communication cycle determines which of the partial sequences are transmitted in the particular transmission cycle. In fact, Nakano appears to indicate that every channel is available during every communication cycle and that certain channels may be unused if there aren't enough isochronous packets needing transmission during a particular cycle. Figure 4 of Nakano illustrates only a single full cycle #m. However, there is no indication in Nakano that the cycle number #m dictates or determines which isochronous packets are transmitted during that particular cycle number #m. Thus, Nakano also does not teach that the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle, as recited in claim 1.

The Examiner also acknowledged that Huang does not teach that the pre-planning comprises defining a duration of each of the plurality of transmission cycles, and attempts to make up for this deficiency with Nakano. However, the Applicants respectfully disagree because Nakano also does not teach that the pre-planning comprises defining a duration of each of the plurality of transmission cycles, as recited in claim 1. The Examiner points to col. 4, line 50 through col. 5, lines 1-6 and Fig. 4 of Nakano as disclosing this feature of claim 1 and states that "duration of cycle is determined and isochronous packets are transmitted first in that duration." However, this is incorrect because the indicated passages of Nakano do not disclose that the pre-planning comprises defining a duration of each of the plurality of transmission cycles. The order of transmission is irrelevant with regard to this feature of claim 1, as this feature merely requires that the duration of each of the transmission cycles be predetermined. Nothing in the cited passages of Nakano disclose a duration of each cycle or predetermining a duration cycle. The Examiner is respectfully requested to point out a specific passage in Nakano that discusses the determination of a duration of the transmission cycles.

Finally, it is submitted that the disclosure in Nakano is directed to audio and music data transmission, such that the claimed feature of composing a transmission sequence for each cycle individually depending on the cycle number determined for the particular transmission cycle would not be relevant in the field of audio and music data transmission.

Therefore, the combination of Huang and Nakano does not discuss or suggest all of the features of claim 1.

Claims 2-5 and 20 depend from claim 1 and include all of the features of that claim plus additional features. Therefore, it is respectfully submitted that claims 2-5 and 20 also patentably distinguish over the combination of Huang and Nakano.

Independent claim 6 recites, in part:

> wherein the transmission sequence is composed of one or more partial sequences the composition of which depends on the cycle number of the particular transmission cycle,
>
> wherein the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle, and
>
> wherein a pre-planning of the real-time communication comprises defining a duration of each of the plurality of transmission cycles.

Therefore, for at least the reasons discussed above with respect to claim 1, the combination of Huang and Nakano does not discuss or suggest all of the features of claim 6.

Claims 7-9 depend from claim 6 and include all of the features of that claim plus additional features. Therefore, it is respectfully submitted that claims 7-9 also patentably distinguish over the combination of Huang and Nakano.

Independent claim 10 recites, in part:

> wherein the transmission sequence is composed of one or more partial sequences the composition of which depends on the determined cycle number,
>
> wherein the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle, and
>
> wherein a pre-planning of the real-time communication comprises defining a duration of each of the plurality of transmission cycles.

Therefore, for at least the reasons discussed above with respect to claim 1, the combination of Huang and Nakano does not discuss or suggest all of the features of claim 10.

Claims 11-13 depend from claim 10 and include all of the features of that claim plus additional features. Therefore, it is respectfully submitted that claims 11-13 also patentably distinguish over the combination of Huang and Nakano.

Independent claim 14 recites, in part:

> wherein the output data is transmitted from the first user to the second user during the subsequent transmission cycle which is divided into a real-time partial cycle and a non-real-time partial cycle in a manner that depends on the cycle number determined by said processing portion,
>
> wherein the cycle number determines which of the partial sequences are transmitted in the subsequent transmission cycle,
>
> wherein a real-time communication is pre-planned before the communication starts, and
>
> wherein a pre-planning of the real-time communication comprises defining a duration of the transmission cycles.

Therefore, for at least the reasons discussed above with respect to claim 1, the combination of Huang and Nakano does not discuss or suggest all of the features of claim 14.

Claims 15-17 depend from claim 14 and include all of the features of that claim plus additional features. Therefore, it is respectfully submitted that claims 15-17 also patentably distinguish over the combination of Huang and Nakano.

C. Claims 18-19 are patentable over Huang in view of Nakano and further in view of Steger

In the Final Office Action, the Examiner rejected claims 18-19 over Huang in view of Nakano and further in view of Steger.

It is submitted that the Examiner failed to establish a prima facie case of obviousness.

As discussed above, the combination of Huang and Nakano does not discuss or suggest all of the features of claim 1, so that claim 1 patentably distinguishes over Huang and Nakano. Steger fails to make up for the deficiency in the combination of Huang and Nakano with respect to claim 1, so that claim 1 patentably distinguishes over the combination of Huang and Nakano and Steger. Thus, claims 18-19, which depend from claim 1, also patentably distinguish over the combination of Huang and Nakano and Steger.

D. Claims 21-24 are patentable over Huang in view of Nakano and further in view of Shioe

In the Final Office Action, the Examiner rejected claims 21-24 over Huang in view of Nakano and further in view of Shioe.

It is submitted that the Examiner failed to establish a prima facie case of obviousness.

For example, independent claim 21 recites, in part:

> wherein the transmission sequence is composed of one or more partial sequences, the composition of which depends on the cycle number determined for the particular transmission cycle,
>
> wherein the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle.

For at least the reasons discussed above with respect to claim 1, Huang and Nakano, alone or in combination, do not discuss or suggest all of the features of claim 21, so that claim 21 patentably distinguishes over Huang and Nakano. Shioe fails to make up for the deficiency in the combination of Huang and Nakano with respect to claim 21, so that claim 21 patentably distinguishes over the combination of Huang and Nakano and Shioe.

Claim 22 depends from claim 6 and includes all of the features of that claim plus additional features. Shioe fails to make up for the deficiency in the combination of Huang and Nakano with respect to claim 6, so that claim 6 patentably distinguishes over the combination of Huang and Nakano and Shioe. Therefore, it is respectfully submitted that claim 22 also patentably distinguishes over the combination of Huang and Nakano and Shioe.

Claim 23 depends from claim 10 and includes all of the features of that claim plus additional features. Shioe fails to make up for the deficiency in the combination of Huang and Nakano with respect to claim 10, so that claim 10 patentably distinguishes over the combination of Huang and Nakano and Shioe. Therefore, it is respectfully submitted that claim 23 also patentably distinguishes over the combination of Huang and Nakano and Shioe.

For example, independent claim 24 recites, in part:

> wherein the output data is transmitted from the first user to the second user during the subsequent transmission cycle which is divided into a real-time partial cycle and a non-real-time partial cycle in a manner that depends on the cycle number determined by said processing portion,
>
> wherein the cycle number determines which of the partial sequences are transmitted in the subsequent transmission cycle.

For at least the reasons discussed above with respect to claim 1, Huang and Nakano, alone or in combination, do not discuss or suggest all of the features of claim 24, so that claim 24 patentably distinguishes over Huang and Nakano. Shioe fails to make up for the deficiency in the combination of Huang and Nakano with respect to claim 24, so that claim 24 patentably distinguishes over the combination of Huang and Nakano and Shioe.

E. CONCLUSION

In summary, Applicants submit that claims 9-16 patentably distinguish over the prior art.

Reversal of the Examiner's rejection is respectfully requested.

Respectfully submitted,

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VIII. CLAIMS APPENDIX (37 C.F.R. § 41.37(c)(1)(viii))

1. (previously presented) A method for transmitting real-time data packets in a cyclic communication system, wherein each of a plurality of transmission cycles has a first partial cycle for transmitting real-time communication and a second partial cycle for transmitting non-real-time communication, the method comprising:

pre-planning the real-time communication before the communication starts;

determining a cycle number of a particular transmission cycle; and

processing a transmission sequence of real-time data packets within the first partial Cycle of the particular transmission cycle,

wherein the transmission sequence is composed of one or more partial sequences, the composition of which depends on the cycle number determined for the particular transmission cycle,

wherein the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle, and

wherein the pre-planning comprises defining a duration of each of the plurality of transmission cycles.

2. (previously presented) A method as claimed in claim 1, wherein times for forwarding each of one or more real-time critical data packets are planned in advance.

3. (original) A method as claimed in claim 1, wherein the transmission sequence is a receive sequence or a send sequence of a user of the communication system.

4. (original) A method as claimed in claim 1, wherein a length of the first partial cycle is selected as a function of the transmission sequence.

5. (original) A method as claimed in claim 1, wherein the transmission sequence is generated from a dynamic transmission list comprising one or more partial sequences and one or more conditional control commands, wherein a corresponding condition for each of the conditional control commands is based on the cycle number of the particular transmission cycle.

6. (previously presented) A user of a cyclic communication system that is operable to

transmit one or more transmission cycles each of which has a first partial cycle for real-time communication and a second partial cycle for non-real-time communication, wherein the real-time communication is pre-planned in advance before the communication starts, the user comprising:

means for determining a cycle number of a particular one of the transmission cycles; and

means for processing a transmission sequence within a first partial cycle of the particular transmission cycle,

wherein the transmission sequence is composed of one or more partial sequences the composition of which depends on the cycle number of the particular transmission cycle,

wherein the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle, and

wherein a pre-planning of the real-time communication comprises defining a duration of each of the plurality of transmission cycles.

7. (original) A user as claimed in claim 6, wherein the transmission sequence is configured as a receive sequence or a send sequence of the user.

8. (original) A user as claimed in claim 6 further comprising means for selecting a length of a first partial cycle of the particular cycle as a function of the transmission sequence.

9. (original) A user as claimed in claim 6, further comprising means for generating the transmission sequence from a dynamic transmission list which further comprises one or more partial sequences and one or more conditional control commands, wherein a corresponding condition for each of the conditional control commands is based on the cycle number of the particular transmission cycle.

10. (previously presented) A cyclic communication system with at least a first and a second user, wherein each of one or more transmission cycles has a first partial cycle for real-time communication and a second partial cycle for non-real-time communication, wherein the real-time communication is pre-planned in advance before the communication starts, and the first and the second users comprise:

means for determining a cycle number of a particular transmission cycle; and

means for processing a transmission sequence in the first partial cycle of the particular

transmission cycle,

wherein the transmission sequence is composed of one or more partial sequences the composition of which depends on the determined cycle number,

wherein the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle, and

wherein a pre-planning of the real-time communication comprises defining a duration of each of the plurality of transmission cycles.

11. (original) A cyclic communication system as claimed in claim 10, wherein the transmission sequence is configured as a receive sequence or a send sequence.

12. (original) A cyclic communication system as claimed in claim 10, further comprising means for selecting a length of a first partial cycle as a function of the transmission sequence.

13. (original) A cyclic communication system as claimed in claim 10, further comprising means for generating the transmission sequence from a dynamic transmission list which further comprises one or more partial sequences and one or more conditional control commands, wherein a corresponding condition for each of the conditional control commands is based on the cycle number of the particular transmission cycle.

14. (previously presented) A communication system operable to isochronously transmit data between respective users during transmission cycles, the system comprising:

a network operable to connect the users;

an application program corresponding to a first user;

a memory portion corresponding to the first user and operable to store user data to facilitate control of the first user, and output data to be transmitted over said network to a second user;

a cycle counter corresponding to the first user and operable to count the transmission cycles corresponding to a communication between the first user and the second user; and

a processing portion corresponding to the first user and operable to determine a number of a subsequent transmission cycle,

wherein the output data is transmitted from the first user to the second user during the subsequent transmission cycle which is divided into a real-time partial cycle and a non-real-time

partial cycle in a manner that depends on the cycle number determined by said processing portion,

wherein the cycle number determines which of the partial sequences are transmitted in the subsequent transmission cycle,

wherein a real-time communication is pre-planned before the communication starts, and

wherein a pre-planning of the real-time communication comprises defining a duration of the transmission cycles.

15. (original) A communication system as claimed in claim 14, wherein the real-time partial cycle comprises one or more microcycles and a transmission sequence of the one or more microcycles is dynamically programmed based on the cycle number determined by said processing portion.

16. (original) A communication system as claimed in claim 15, wherein the transmission sequence is predefined prior to commencement of the communication between the first and second users.

17. (original) A communication system as claimed in claim 14, wherein the network comprises a network based on at least one of FieldBus, Profibus, Ethernet, Industrial Ethernet, FireWire, PC-internal bus systems (PCIs) and Isochronous Realtime Ethernet.

18. (previously presented) The method as claimed in claim 1, wherein, based on the planning of the real-time communication, only updated data of the real-time data packets is transmitted in the transmission cycles.

19. (previously presented) The method as claimed in claim 18, wherein the real-time data packets comprise a peripheral image and wherein unmodified portions of the peripheral image are not transmitted in the real-time communication cycle.

20. (previously presented) The method as claimed in claim 5, wherein the conditional control commands utilize the cycle number to identify which ones of the partial sequences are to be transmitted in the particular cycle.

21. (previously presented) A method for transmitting real-time data packets in a cyclic communication system, wherein each of a plurality of transmission cycles has a first partial cycle for transmitting real-time communication and a second partial cycle for transmitting non-real-time communication, the method comprising:

planning the real-time communication;

determining a cycle number of a particular transmission cycle; and

processing a transmission sequence of real-time data packets within the first partial cycle of the particular transmission cycle,

wherein the transmission sequence is composed of one or more partial sequences, the composition of which depends on the cycle number determined for the particular transmission cycle,

wherein the cycle number determines which of the partial sequences are transmitted in the particular transmission cycle, and

wherein each partial cycle for transmitting real-time communication comprises microcycles, and

wherein only isochronous real-time communication is transmitted in the microcycles.

22. (previously presented) The user as claimed in claim 6, wherein each partial cycle for real-time communication comprises microcycles, and

wherein only isochronous real-time communication is transmitted in the microcycles.

23. (previously presented) The cyclic communication system as claimed in claim 10, wherein each partial cycle for real-time communication comprises microcycles, and

wherein only isochronous real-time communication is transmitted in the microcycles.

24. (previously presented) A communication system operable to isochronously transmit data between respective users during transmission cycles, the system comprising:

a network operable to connect the users;

an application program corresponding to a first user;

a memory portion corresponding to the first user and operable to store user data to facilitate control of the first user, and output data to be transmitted over said network to a second user;

a cycle counter corresponding to the first user and operable to count the transmission

cycles corresponding to a communication between the first user and the second user; and

a processing portion corresponding to the first user and operable to determine a number of a subsequent transmission cycle,

wherein the output data is transmitted from the first user to the second user during the subsequent transmission cycle which is divided into a real-time partial cycle and a non-real-time partial cycle in a manner that depends on the cycle number determined by said processing portion,

wherein the cycle number determines which of the partial sequences are transmitted in the subsequent transmission cycle, and

wherein each partial cycle for real-time communication comprises microcycles, and wherein only isochronous real-time communication is transmitted in the microcycles.

IX. EVIDENCE APPENDIX (37 C.F.R. § 41.37(c)(1)(ix))

Not applicable

X. RELATED PROCEEDING APPENDIX (37 C.F.R. § 41.37(c)(1)(x))

Not applicable